

The Applicants respectfully submit that the original range of 0.0010% or more inherently includes the new range of “0.0030% or more.” The original range is broader than the new range and by definition provides support in the specification. Also, as clearly set forth in MPEP 2163.05, it is not necessary for there to be “literal support” in the specification to comply with 35 U.S.C. §112. While it is true that literal support can satisfy 35 U.S.C. §112, other types of support including inherent support can fully satisfy 35 U.S.C. §112. In that regard, the Applicants invite the Examiner’s attention to Part III of MPEP 2163.05 wherein the Wertheim case is discussed. That case included a broad range that was literally present in the specification. The Applicant then claimed a narrower range such as is the case here and that narrower range was deemed to be inherently supported by the original broad range. Therefore, the Applicants respectfully submit that literal support is not required under 35 U.S.C. §112. Inherent support is completely sufficient to meet the requirements of 35 U.S.C. §112 as specifically stated in MPEP 2163.05. Thus, the Applicants respectfully submit that the Applicants’ claimed range of 0.0030% or more is supported within the requirements of 35 U.S.C. §112.

In any event, the Applicants invite the Examiner’s attention to page 22 of the specification at lines 17 and 18 which state “... the amount of dissolved N is preferably set at 0.0030% or more.” This is also literal support. Withdrawal of the 35 U.S.C. §112 rejection as it applies to claimed amount of N in the dissolved state is respectfully requested.

Moving now to the claimed N/Al range of “0.6 or more,” the Applicants respectfully submit that such a new range is also fully supported in accordance with 35 U.S.C. §112. The Applicants originally claimed 0.3 or more and that originally claimed range inherently encompasses the currently claim 0.6 or more range. The Applicants again remind the Examiner that literal support in the specification is not required in accordance with MPEP 2161.05. Inherent support is entirely sufficient as discussed above.

The Applicants also respectfully submit that the position that the “0.3% or more” originally claimed amount “could merely mean 0.31 not 0.6%” is not well taken. There is nothing in the “0.3 or more” language that restricts the meaning of that phrase to be “0.31.” Moreover, when taken in the context of the Applicants’ specification, which must be done in accordance with MPEP 2161.05, it becomes clear that one skilled in the art could in no way reasonably interpret 0.3 or more to “merely mean 0.31.” In that regard, the Applicants invite the Examiner’s attention to page 52 which houses Table 1. A range of N/Al ratios is provided in the

column that is second from the right. Those N/Al ratios range from 0.31 on one hand up to 3.63 on the other hand. Although these are merely examples and are in no way limiting, such examples render the position in the rejection that the originally claimed “0.03 or more” could “merely mean 0.31” as being untenable. There is no doubt as to those of ordinary skill in the art that based on inherency, and the many examples in the Applicants’ specification that the newly claimed 0.6 or more language fully supported by the original 0.3 or more language under 35 U.S.C. §112. Withdrawal of the rejection is respectfully requested.

The Applicants note the rejection of Claims 1-5, 10, 12 and 14-15 under 35 U.S.C. §103 over the hypothetical combination of Tosaka with Maid. The Applicants respectfully submit that one skilled in the art would not make the hypothetical combination as set forth in the rejection and that the combination is, in any event, non-enabling as to the Applicants’ claimed subject matter. Details are set forth below.

The Applicants first agree with the Examiner that Maid does not disclose the claimed N/Al ratio in the amount of dissolved N as well as the ferrite grain size. The Applicants also respectfully submit that Maid fails to disclose the Applicants’ claimed range of less than 0.02% of Al. Instead, Maid discloses 0.02-0.10% Al. This is set forth in multiple locations such as in the Abstract, column 1, line 50, Table 1 and Claim 1 as set forth in column 6 at line 9. Other than the repetition of the above stated 0.02-0.10% range, there is no discussion of Al in the remaining text of Maid. That is simply all of the disclosure there is with respect to Al. In any event, however, it is clear that the Applicants’ claimed range of less than 0.02% of Al is not disclosed by Maid. The Applicants also note that “less than 0.02%” does not overlap “0.02-0.10%.”

The rejection asserts with respect to the N/Al ratio that “0.6 reads on 0.55 as calculated from Maid.” The Applicants respectfully submit that 0.6 does not, in fact, read on 0.55. 0.6 and 0.55 are completely different numbers and, assuming an analysis based on hundredths, one skilled in the art can readily see that 0.56, 0.57, 0.58 and 0.59 all stand between 0.6 and 0.55. Thus, those skilled in the art can readily determine that 0.6 does not “read” on 0.55.

The Applicants also respectfully submit in view of the above substantial difference between 0.55 and 0.6 or more, that the ranges do not only not overlap, but are not even close. Accordingly, there is no *prima facie* case of obviousness associated with the Applicants’ claimed range of 0.6 or more.

What the rejection also fails to mention is that the Maid N/Al 0.55 number is the uppermost end of the Maid range and the N/Al ratios of Maid range downwardly from 0.55. It should also be noted that Maid does not literally disclose this number. It is a calculated number that Maid did not even recognize. Thus, the case arises that the Maid range is less than 0.55 and the Applicants' claimed range is 0.6 or more. There is no overlap, there is substantial space between the two and there is utterly no teaching or suggestion to those skilled in the art that the Maid range should increase above 0.55 and/or that there would be any advantage to be gained by so doing because Maid doesn't even recognize the ratio. The fact that Maid utterly fails to have any discussion concerning the amount of Al other than the stated ranges would not provide any teaching or suggestion to one skilled in the art that there is any particular importance associated with the amount of Al, much less the amount of Al relevant to N or how Al would effect the amount of N whether dissolved or otherwise.

In sharp contrast, the Applicants have discovered that there is a significant correlation between the Al, the amount of dissolved N and the size of ferrite grains. Moreover, the Applicants respectfully submit that not only is there not a *prima facie* case based on the facts, but that the Applicants have no burden to show substantial, additional differences between the properties of the claimed compound and the prior art compound for reasons beyond the differences already established, namely the admitted failure of Maid to disclose, teach or suggest the claimed N/Al ratio, the amount of dissolved N in the steel and the ferrite grain size.

The rejection also takes the position that the amount of dissolved N "would have been inherently possessed by alloy steel of Maid since the claimed N content and other alloying elements' contents, microstructure, tensile properties, hot rolling and baked hardening steps are overlapped." The Applicants respectfully submit that this is inaccurate. The Applicants have already established that the alloying elements contents do not overlap and are not the same. Maid does not disclose the claimed amount of less than 0.02% of Al. Instead, Maid discloses a larger range of 0.02-0.010% of Al. Therefore, there is an alloying element that is particularly important and that has not overlapped with Maid. Also, there is no establishment that the microstructure of Maid is the same as that as claimed. That is merely speculation in the rejection not supported by the prior art relied upon.

In any event, the rejection relies on Tosaka to provide the teachings concerning the claimed ferrite grain size. The Applicants respectfully submit that one skilled in the art would

not hypothetically combine Tosaka with Maid and, in any event, the hypothetical combination is non-enabling with respect to the Applicants' claims. First, the Applicants respectfully submit that one skilled in the art would not combine Tosaka with Maid. The reasons for this are simple. Maid discloses a hot-rolled steel strip. In sharp contrast, Tosaka discloses cold-rolled steel sheets. This alone would give one skilled in the art pause as to making the hypothetical combination. This problem is magnified, however, because of the particular reason that Tosaka is relied upon in combination with Maid. As noted in the rejection, Tosaka is relied upon for the teachings of the claimed ferrite grain size. The problem with this is that Tosaka provides so-called "uniform and fine recrystallized ferrite structure having a mean grain diameter of $20\mu\text{m}$ or less" based on cold rolling and not hot rolling. This is explicitly taught in column 4 beginning at line 43 which states:

As for the cold rolling, generally the reduction rate in thickness should desirably be high in order to obtain a fine recrystallized structure after annealing. In view of this, the lower limit of the reduction rate in thickness is set to 50%.

What this means to one skilled in the art is that the grain sizes of Tosaka which are said to be $20\mu\text{m}$ or less are achieved first by cold rolling and then by annealing subsequent to that cold rolling. There is utterly no teaching or suggestion in Tosaka as to how to achieve a ferrite phase having an average grain size of $10\mu\text{m}$ or less for a hot-rolled steel sheet. Tosaka is only able to establish the grain diameters of $20\mu\text{m}$ or less in the context of cold rolling, not hot rolling. Thus, one skilled in the art would not look to Tosaka to achieve grain sizes of $10\mu\text{m}$ or less in the context of the claimed hot rolling when Tosaka is directed to grain diameters of $20\mu\text{m}$ or less in the context of cold rolling.

In any event, the Applicants respectfully submit that Tosaka is non-enabling with respect to providing disclosure, teachings or suggestions to those skilled in the art to achieve a ferrite phase with an average grain size $10\mu\text{m}$ or less. The reason is that Tosaka provides no teachings with respect to ferrite structure or grain size in the context of hot rolling. Tosaka is only able to achieve fine grains of ferrite after cold rolling, not after hot rolling. The Applicants have carefully scrutinized the entire Tosaka disclosure and there is not one word in that disclosure that would enable one skilled in the art to achieve a ferrite phase with an average grain size of $10\mu\text{m}$ or less as recited in the solicited claims based on the Tosaka disclosure. Those teachings simply do not exist in Tosaka and Tosaka is accordingly non-enabling.

Tosaka is further non-enabling with respect to the grain size, irrespective of the cold rolling versus hot rolling problem. In that regard, the Applicants invite the Examiner's attention to Tables 3, 5, 7, 9, 11 and 13 wherein a multiplicity of ferrite grain size diameters are shown based on experiments run in accordance with the teachings of Tosaka. Not a single example was able to achieve a grain size of $10\mu\text{m}$ or less even in the context of cold rolling, much less in the context of hot rolling as claimed by the Applicants. The Applicants therefore respectfully submit that this is further evidence of the complete non-enablement of the Applicants' claimed ferrite phase of an average grain size of $10\mu\text{m}$ or less in a hot-rolled sheet. Thus, even if one skilled in the art were to hypothetically combine Tosaka with Maid, one skilled in the art would still not be able to determine how to achieve the Applicants' specifically claimed grain size in the ferrite phase. Withdrawal of the rejection is based on the hypothetical combination of Tosaka with Maid is respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,


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